

IN THE CLAIMS

1. (Presently Amended) An apparatus for converting an analog image data into a digital image data according to at least one color characteristic and at least one image data characteristic in a CMOS image sensor including a pixel array having M (row line) \times N (column line) color pixels, wherein the color pixels include a first color pixel for sensing a first color, a second color pixel for sensing a second color and a third color pixel for sensing a third color, the apparatus comprising:

N number of a column pixel array arrays, each having two different color pixels selected among the first to third color pixels for outputting two analog image data in response to an inputted image;

an analog reference voltage generator generating means having first to third reference voltage generators, each for generating first to third analog reference voltages according corresponding to the first to third color pixels, wherein each one of the first to third different analog reference voltage voltages has is generated as a different value and with a different decline rate from the other analog reference voltages according to the at least one image data characteristic;

N number of selectors a-selecting means, in response to a select control signal, each for selecting one of two inputted analog reference voltages, in response to a select control signal which are inputted based on the two color pixels in the column pixel array, wherein the two inputted analog reference voltages respectively correspond with corresponding to two of the first to third color pixels included in the column pixel array; and

N number of comparators a-comparing means, each for comparing a selected the analog reference voltage outputted from each selector and with one of the two analog image data

outputted from each column pixel array to generate the digital image data corresponding to the color pixels,

whereby a conversion operation of the analog image data into the digital image data is ~~differently~~ carried out differently according to the color characteristic.

2. (Presently Amended) The apparatus as recited in claim 1, wherein the analog reference voltage generator ~~generating means~~ includes:

a the first reference voltage generator for generating a the first reference voltage with respect to the first color pixel;

a the second reference voltage generator for generating a the second reference voltage with respect to the second color pixel; and

a the third reference voltage generator for generating a the third reference voltage with respect to the third color pixel.

3. (Presently Amended) The apparatus as recited in claim 2, wherein the color pixels contained in the pixel array are arranged as a form of a Bayer pattern, the Bayer pattern including:

the first color pixels and the second color pixels repeatedly arranged on odd row lines of the pixel array in this order; and

the second color pixels and the third color pixels repeatedly arranged on even row lines of the pixel array in this order.

4. (Presently Amended) The apparatus as recited in claim 3, wherein the selectors include ~~selecting means~~ includes:

a first selector ~~selecting means~~, arranged on the odd column lines, for selecting one of the first reference voltage and the second reference voltage in response to the select control signal according to the color pixels; and

a second selector ~~selecting means~~, arranged on the even column lines, for selecting one of the second reference voltage and third reference voltage in response to the select control signal according to the color pixels.

5. (Original) The apparatus as recited in claim 4, wherein the first color pixel is a red color pixel, the second color pixel is a green color pixel and the third color pixel is a blue color pixel.

6. (Presently Amended) The apparatus as recited in claim 4, wherein the selector ~~selecting means~~ is a multiplexer.

7. (New) A CMOS image sensor for generating a digital image data corresponding to an inputted image based at least one color characteristic and at least one image data characteristic, comprising:

a pixel array including M (row line) \times N (column line) color pixels activated in a row-by-row basis, wherein the $M \times N$ color pixels have N number of column pixel arrays, each having two different color pixels selected among first to third color pixels for outputting an analog image data corresponding to an activated color pixel;

an analog reference voltage generator for generating first to third analog reference voltages corresponding to the first to third color pixels, wherein each of the first to third analog reference voltages has a different value with a different decline rate according to the image data characteristic;

N number of selectors, each for selecting one of two of the first to third analog reference voltages in response to a select control signal; and

N number of comparators, each for comparing a selected analog reference voltage outputted from each selector with the analog image data to generate the digital image data corresponding to the activated color pixel,

whereby a conversion operation of the analog image data into the digital image data is carried out differently based on the color characteristic.

8. (New) The CMOS image sensor as recited in claim 7, wherein two of the first to third analog reference voltages inputted to each selector respectively correspond to two of the first to third color pixels included in the column pixel array.

9. (New) The CMOS image sensor as recited in claim 8, wherein the select control signal is inputted based on the two color pixels included in each column pixel array.

10. (New) The CMOS image sensor as recited in claim 9, wherein the analog reference voltage generator includes:

a first reference voltage generator for generating the first reference voltage with respect to the first color pixel according to the image data characteristic;

a second reference voltage generator for generating the second reference voltage with respect to the second color pixel according to the image data characteristic; and

a third reference voltage generator for generating the third reference voltage with respect to the third color pixel according to the image data characteristic.

11. (New) The CMOS image sensor as recited in claim 10, wherein the $M \times N$ color pixels contained in the pixel array are arranged as a form of a Bayer pattern, the Bayer pattern including:

the first color pixels and the second color pixels repeatedly arranged on odd row lines of the pixel array in this order; and

the second color pixels and the third color pixels repeatedly arranged on even row lines of the pixel array in this order.

12. (New) The CMOS image sensor as recited in claim 11, wherein the first color pixel is a red color pixel, the second color pixel is a green color pixel and the third color pixel is a blue color pixel.

13. (New) The CMOS image sensor as recited in claim 12, wherein the selector is a multiplexer.